

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (previously presented): A method of purifying impure water contaminated with a filterable impurity and a dissolved impurity, the method comprising the steps of:

providing impure water to a primary microfiltration or ultrafiltration unit to remove the filterable impurity and produce impure filtered water contaminated with a dissolved impurity;

providing the impure filtered water contaminated with a dissolved impurity to a reverse osmosis unit to produce a potable water stream and a residual reverse osmosis stream; and

treating the residual reverse osmosis stream by being passed through a secondary filter prior to reuse to backwash the microfiltration or ultrafiltration unit.

Claim 2 (previously presented): A method according to claim 1 wherein the secondary filter is a microfiltration or ultrafiltration membrane.

Claim 3 (currently amended): A method according to ~~claim 1~~ claim 2 wherein the secondary filter is ~~a cartridge filter~~ is backwashed.

Claim 4 (currently amended): A method according to ~~claim 2 or claim 3~~ claim 1 wherein the secondary filter is ~~backwashed~~ a cartridge filter.

Claim 5 (currently amended): A method according to ~~any one of the preceding claims~~
claim 4 wherein the ~~impure water is sea water~~ secondary filter is backwashed.

Claim 6 (currently amended): A method according to ~~any one of the preceding claims~~
claim 1 wherein the ~~insoluble impurities include those typically found in~~ impure water is sea
water.

Claim 7 (currently amended): A method according to ~~any one of the preceding claims~~
claim 1 wherein the insoluble impurities include ~~organic matter, inorganic matter, particulate~~
~~matter, biological matter and non-biological matter~~ those typically found in sea water.

Claim 8 (currently amended): A method according to ~~any one of the preceding claims~~
claim 1 wherein the ~~dissolved~~ insoluble impurities include ~~dissolved, soluble or solubilised~~
~~organic or inorganic matter~~ organic matter, inorganic matter, particulate matter, biological matter
and non-biological matter.

Claim 9 (currently amended): A method according to ~~any one of the preceding claims~~
claim 1 wherein the dissolved impurities include ~~sodium ions and chloride ions~~ dissolved,
soluble or solubilized organic or inorganic matter.

Claim 10 (currently amended): A method according to ~~any one of the preceding claims~~
claim 9 wherein the ~~residual reverse osmosis stream is treated prior to being reused by one or~~

~~more of chemical treatment, radiation treatment or physical treatment~~ dissolved impurities include sodium ions and chloride ions.

Claim 11 (currently amended): A method according to ~~claim 6~~ claim 1 wherein the ~~chemical treatment is chlorination, fluorination, disinfection, scale control treatment, water softening, peroxide, sulfite/bisulfite, ozone or mixtures thereof~~ residual reverse osmosis stream is treated prior to being reused by one or more of chemical treatment, radiation treatment or physical treatment.

Claim 12 (currently amended): A method according to ~~claim 6~~ claim 11 wherein the ~~radiation treatment is UV, IR, microwave or mixtures thereof~~ chemical treatment is chlorination, fluorination, disinfection, scale control treatment, water softening, peroxide, sulfite/bisulfite, ozone or mixtures thereof.

Claim 13 (currently amended): A method according to ~~claim 6~~ claim 11 wherein the ~~physical treatment is ultrasonication or vortexing,~~ radiation treatment is UV, IR, microwave or mixtures thereof.

Claim 14 (currently amended): A method according to ~~any one of the preceding claims~~ claim 11 wherein the ~~reverse osmosis stream is treated by heat, electroprecipitation, magnetic treatments or combinations thereof~~ physical treatment is ultrasonication or vortexing.

Claim 15 (currently amended): A method according to ~~any one of the preceding claims~~
~~claim 11~~ wherein the ~~residual reverse osmosis feed is used to backwash the primary~~
~~microfiltration or ultrafiltration unit and is subject to ultrafiltration or microfiltration by a~~
~~secondary ultrafiltration or microfiltration unit prior to said backwashing~~ reverse osmosis stream
is treated by heat, electroprecipitation, magnetic treatments or combinations thereof.

Claim 16 (currently amended): A method according to ~~any one of the preceding claims~~
~~claim 1~~ wherein the ~~secondary filter comprises multiple stages of filtration~~ residual reverse
osmosis feed is used to backwash the primary microfiltration or ultrafiltration unit and is subject
to ultrafiltration or microfiltration by a secondary ultrafiltration or microfiltration unit prior to
said backwashing.

Claim 17 (currently amended): A method according to claim 1 wherein the ~~multiple stages~~
~~of filtration include a first filtration through a coarse filter prior to filtration through a membrane~~
~~filter~~ secondary filter comprises multiple stages of filtration.

Claim 18 (currently amended): A method according to claim 17 wherein the ~~reverse~~
~~osmosis reject is in controllable fluid communication with coarse backwashable filters such as~~
~~single or multimedia filters, disc filters, diatomaceous earth filters, membrane filters, strainers, or~~
~~screens~~ multiple stages of filtration include a first filtration through a coarse filter prior to
filtration through a membrane filter.

Claim 19 (currently amended): A method ~~of purifying impure water, the method~~ comprising the steps of ~~providing a primary microfiltration unit, a reverse osmosis unit in downstream fluid communication from said primary microfiltration or ultrafiltration unit, and a controllable fluid pathway for directing residual reverse osmosis feed to backwash said microfiltration unit; and wherein the residual reverse osmosis feed is further subjected to ultrafiltration or microfiltration by a secondary ultrafiltration or microfiltration unit prior to a step of backwashing the primary ultrafiltration or microfiltration membrane~~ according to claim 18 wherein the reverse osmosis reject is in controllable fluid communication with coarse backwashable filters such as single or multimedia filters, disc filters, diatomaceous earth filters, membrane filters, strainers, or screens.

Claim 20 (currently amended): A method ~~according to any one of the preceding claims wherein the reverse osmosis reject used to backwash the filter has a suspended solids content of less than a predetermined quantity of purifying impure water, the method comprising the steps of~~ providing a primary microfiltration unit, a reverse osmosis unit in downstream fluid communication from said primary microfiltration or ultrafiltration unit, and a controllable fluid pathway for directing residual reverse osmosis feed to backwash said microfiltration unit; and wherein the residual reverse osmosis feed is further subjected to ultrafiltration or microfiltration by a secondary ultrafiltration or microfiltration unit prior to a step of backwashing the primary ultrafiltration or microfiltration membrane.

Claim 21 (currently amended): A method according to ~~any one of the preceding claims~~ claim 20 wherein the ~~reverse osmosis reject used to backwash the filter has a suspended solids~~

~~content sufficient to allow it to be returned to the impure water source~~ reverse osmosis reject
used to backwash the filter has a suspended solids content of less than a predetermined quantity.

Claim 22 (currently amended): A method according to ~~claim 20 or 21~~ claim 21 wherein
the ~~reverse osmosis reject used to backwash the filter has a suspended solids content sufficient to~~
~~allow it to be returned to the ocean~~ reverse osmosis reject used to backwash the filter has a
suspended solids content sufficient to allow it to be returned to the impure water source.

Claim 23 (currently amended): A method according to ~~any one claims 20 to 22~~ claim 22
wherein the ~~suspended solids content is controlled by controlling desalination recovery rate~~
reverse osmosis reject used to backwash the filter has a suspended solids content sufficient to
allow it to be returned to the ocean .

Claim 24 (currently amended): ~~Apparatus for purifying impure water contaminated with a~~
~~filterable impurity and a dissolved impurity, the apparatus comprising:~~
~~a primary microfiltration or ultrafiltration unit to remove the filterable impurity;~~
~~a reverse osmosis unit to produce a potable water stream and a residual reverse osmosis stream;~~
~~said reverse osmosis in downstream fluid communication from said primary microfiltration or~~
~~ultrafiltration unit;~~
~~a controllable fluid pathway to transfer impure filtered water contaminated with a dissolved~~
~~impurity from the primary microfiltration or ultrafiltration unit to the reverse osmosis unit; and~~
~~means for treating the residual reverse osmosis stream prior to reuse~~ A method according to

claim 21 wherein the suspended solids content is controlled by controlling desalination recovery rate.

Claim 25 (currently amended): Apparatus according to claim 24 wherein the residual reverse osmosis stream is directed by a controllable fluid pathway to backwash the primary microfiltration or ultrafiltration unit Apparatus for purifying impure water contaminated with a filterable impurity and a dissolved impurity, the apparatus comprising:

a primary microfiltration or ultrafiltration unit to remove the filterable impurity;

a reverse osmosis unit to produce a potable water stream and a residual reverse osmosis stream; said reverse osmosis in downstream fluid communication from said primary microfiltration or ultrafiltration unit;

a controllable fluid pathway to transfer impure filtered water contaminated with a dissolved impurity from the primary microfiltration or ultrafiltration unit to the reverse osmosis unit; and

means for treating the residual reverse osmosis stream prior to reuse.

Claim 26 (currently amended): Apparatus according to ~~claim 24 or 25~~ claim 25 wherein the residual reverse osmosis stream is directed by a controllable fluid pathway through a secondary microfiltration or ultrafiltration membrane to backwash the primary microfiltration or ultrafiltration unit residual reverse osmosis stream is directed by a controllable fluid pathway to backwash the primary microfiltration or ultrafiltration unit.

Claim 27 (currently amended): Apparatus according to ~~any one of claims 24 to 26~~ further including one or any combination of ~~ports for the introduction of chemical agents, irradiation means, ultrasonic generators, vortexing devices, heating elements, electroprecipitators and magnets~~ claim 25 wherein the residual reverse osmosis stream is directed by a controllable fluid pathway through a secondary microfiltration or ultrafiltration membrane to backwash the primary microfiltration or ultrafiltration unit.

Claim 28 (currently amended): Apparatus according to ~~any one of claims 24 to 27~~ wherein the chemical agents are ~~chlorination agents, fluorination agents, ozonation agents, disinfecting agents, scale control treatment agents, water softening agents, peroxide, sulfite/bisulfite~~ claim 25 further including one or any combination of ports for the introduction of chemical agents, irradiation means, ultrasonic generators, vortexing devices, heating elements, electroprecipitators and magnets.

Claim 29 (currently amended): Apparatus according to ~~any one of claims 24 to 28~~ for purifying impure water contaminated with a filterable impurity and a dissolved impurity, the apparatus comprising:

- ~~a primary microfiltration or ultrafiltration unit to remove the filterable impurity;~~
- ~~a reverse osmosis unit to produce a potable water stream and a residual reverse osmosis stream; said reverse osmosis unit in downstream fluid communication from said primary microfiltration or ultrafiltration unit;~~
- ~~a controllable fluid pathway to transfer impure filtered water comprising a dissolved impurity from the primary microfiltration or ultrafiltration unit to the reverse osmosis unit; and~~

a conduit to transfer a residual reverse osmosis stream from the reverse osmosis unit to backwash the primary microfiltration or ultrafiltration unit via a secondary microfiltration or ultrafiltration unit claim 25 wherein the chemical agents are chlorination agents, fluorination agents, ozonation agents, disinfecting agents, scale control treatment agents, water softening agents, peroxide, sulfite/bisulfite.

Claim 30 (currently amended): Apparatus according to ~~any one of claims 24 to 29~~ wherein ~~the secondary microfiltration or ultrafiltration unit is a backwashable or disposable cartridge microfiltration or ultrafiltration system claim 25 for purifying impure water contaminated with a filterable impurity and a dissolved impurity, the apparatus comprising:~~

a primary microfiltration or ultrafiltration unit to remove the filterable impurity;

a reverse osmosis unit to produce a potable water stream and a residual reverse osmosis stream; said reverse osmosis unit in downstream fluid communication from said primary microfiltration or ultrafiltration unit;

a controllable fluid pathway to transfer impure filtered water comprising a dissolved impurity from the primary microfiltration or ultrafiltration unit to the reverse osmosis unit; and

a conduit to transfer a residual reverse osmosis stream from the reverse osmosis unit to backwash the primary microfiltration or ultrafiltration unit via a secondary microfiltration or ultrafiltration unit.

Claim 31 (currently amended): Apparatus according to ~~any one of claims 24 to 30 claim 25~~ wherein the ~~secondary microfiltration or ultrafiltration unit comprises multiple stages of~~

~~filtration~~ secondary microfiltration or ultrafiltration unit is a backwashable or disposable cartridge microfiltration or ultrafiltration system.

Claim 32 (currently amended): Apparatus according to ~~claim 31~~ claim 25 wherein the ~~multiple stages of filtration include a first filtration through a coarse filter prior to filtration through a membrane filter~~ secondary microfiltration or ultrafiltration unit comprises multiple stages of filtration.

Claim 33 (currently amended): Apparatus according to ~~any one of claims 24 to 32~~ claim 32 wherein the ~~reverse osmosis reject is in controllable fluid communication with coarse backwashable filters such as single or multimedia filters, disc filters, diatomaceous earth filters, membrane filters, strainers, or screens~~ multiple stages of filtration include a first filtration through a coarse filter prior to filtration through a membrane filter.

Claim 34 (new): Apparatus according to claim 25 wherein the reverse osmosis reject is in controllable fluid communication with coarse backwashable filters such as single or multimedia filters, disc filters, diatomaceous earth filters, membrane filters, strainers, or screens.